

Miraculous Improvement in Corn Yields

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The first farmers in the Fairbury area likely did not achieve long-term average corn yields of 30 bushels per acre. Many innovations over the years have increased long-term average corn yields to more than 200 bushels per acre.

Early farmers were plagued by flooding and standing water in their fields. The glaciers from 10,000 years ago made our farmland very flat, but there was no easy way for the rainwater to drain away. The introduction of clay tile in the 1880s changed our land from swampland to some of the most productive farmland on the planet.

One of the few known descriptions of farming methods in the 1800s is the Harper's Weekly magazine article Farming in the Great West in the September 23, 1871 issue. Michael Sullivant (1807-1879) bought 40,000 acres in what is now known as Sibley, Illinois. He named his massive farm Burr Oaks. Harper's Weekly did a story about Burr Oaks because, in 1871, it was the largest farm in the United States.

Mr. Sullivant first had to break the prairie with its natural vegetation. Teams of oxen were used to pull a breaking plow. This plow cut a furrow twenty inches in width. The primary purpose of this first pass was to turn over the sod and leave a furrow about three inches in depth. This ground was often immediately planted in corn. The first year's harvest would only be about 20 bushels per acre. If there were time to follow the breaking plow with a stirring plow, the first year's corn crop would increase to 45 bushels per acre. Every bushel of corn saved from the harvest was used to plant eight acres of corn the following season.

In that era, farmers saved some of their corn harvested in the Fall and planted it the following Spring. Mr. Sullivant's long-term corn yield was 45 bushels to the acre. He had to save one bushel of corn for every eight acres he had to plant the following season. In 1871, corn sold for about \$.44 per bushel, equivalent to \$11.38 per bushel in today's dollars.

Corn yields in the Fairbury area stayed at 45 bushels per acre from the 1870s until the 1930s. In the early 1900s, agricultural colleges like Iowa State University began experimenting and applying scientific principles to improve crop production.

Ears of corn are created when pollen released by the anthers in the top tassel area of the corn plant travels down and enters the corn silks. The wind or insects transfer the pollen. This process has occurred for thousands of years and is called open pollination. No pollen is produced if the tassel is removed, and nearby corn plants must provide the pollen.

Around 1910, experimental corn breeders became excited about improving corn yields by crossing two high-yielding varieties to produce hybrid seed corn. This idea was tested by planting the two different varieties in alternating rows and detasseling one of the varieties. This method of seed production proved to be disappointing and was abandoned.

This early research led to the idea of producing higher-yielding corn seeds by crossing two inbred lines. This idea was accomplished by planting a row of one inbred variety followed by several rows of a second variety. The tassels of the second variety were removed by hand so that the second variety could be pollinated by the first. This new idea was successful and stimulated further experimentation in producing higher-yielding corn seeds.

One of the most important men involved with improving corn yields was Henry Agard Wallace (1888-1965). He was born and raised on a farm in Iowa, and his father was a Professor of Dairying at Iowa State Agricultural College.

George Washington Carver (1864-1943) was an American agricultural scientist and inventor who promoted alternative crops to cotton and methods to prevent soil depletion. He was one of the most prominent black scientists of the early 20th Century. George Washington Carver was a student of Professor Wallace. Since Mr. Carver was barred from college housing because of his race, Professor Wallace invited him to live with him and his son, Henry A. Wallace. In exchange for the free housing, Mr. Carver tutored Henry A. Wallace in botany and plant breeding. Henry was very interested in how plant breeding could be used to increase the production of corn, Iowa's biggest crop.

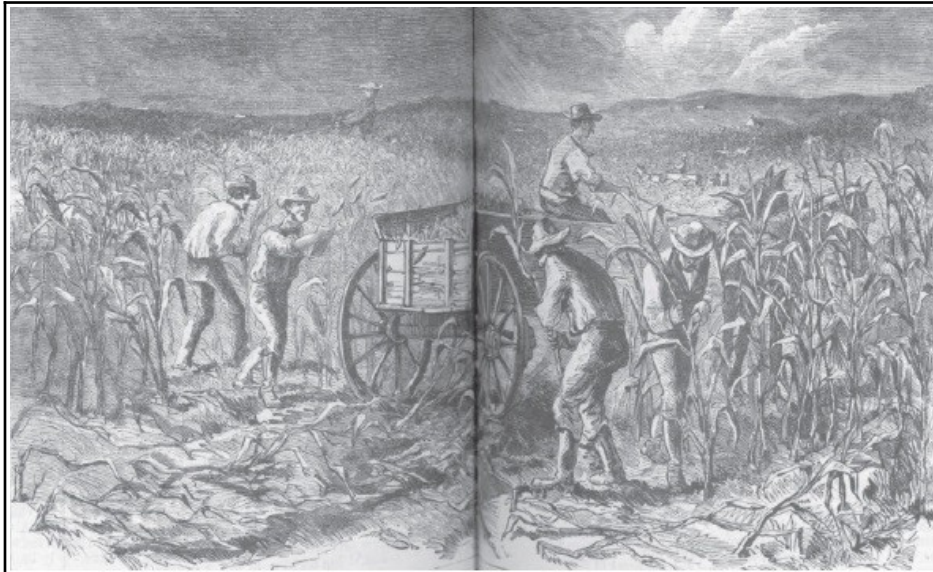
In that era, it was assumed the ears of corn that looked the best would produce the most significant yield. Henry A. Wallace devised an experiment that disproved this commonly held assumption. Henry A. Wallace and his wife purchased a farm near Johnston, Iowa, in 1914. They initially attempted to combine corn production with dairy farming but later focused on corn. Influenced by Edward Murray East, Wallace focused on producing hybrid corn and developing a variety called Copper Cross. In 1923, he reached the first-ever contract for hybrid seed production, agreeing to grant the Iowa Seed Company the sole right to grow and sell Copper Cross corn. In 1926, he co-founded the Hi-Bred Corn Company to develop and produce hybrid corn. It initially turned only a tiny profit but eventually became a massive financial success. Today, the company is one of the largest seed corn companies in the world and is known as Pioneer Hi Bred International.

Henry A. Wallace became the Secretary of Agriculture in 1933 in President Franklin Roosevelt's administration. He used his government position to promote using hybrid corn seed to improve national corn yields. Today, this would probably be considered a conflict of interest since Henry A. Wallace was one of the founders and owners of the largest hybrid seed corn company in the world. Henry A. Wallace also served as a Vice President to President Franklin D. Roosevelt from 1941 to 1945.

Besides tiling and hybrid seed corn, several other factors combined to increase corn yields in the 20th Century. Adopting internal combustion-powered tractors to replace

horses meant corn could be planted more densely since the rows no longer had to be wide enough to accommodate a horse. Cheaply produced and plentiful nitrogen fertilizer also improved corn yields. Developing pesticides and insecticides was also an essential factor in enhancing corn yields.

The over four-fold increase in corn yields in the last 150 years has been a technological wonder. Corn yields will likely continue to increase as new technological innovations are developed.



Harvesting corn by hand on the Burr Oaks farm in 1871 in what is now Sibley, Illinois. Sketch from 1871 Harper's Weekly story on the largest farm at that time in the United States.